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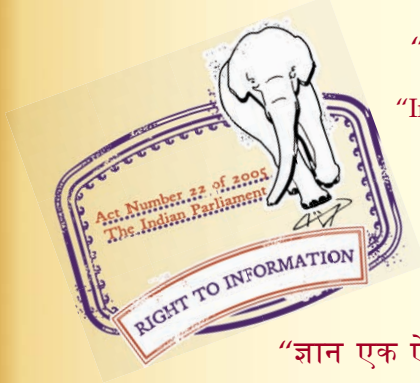
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IS 8977 (1978): Clay bonded graphite crucibles [MTD 15: Refractories]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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IS : 8977 - 1978

Indian Standard
**SPECIFICATION FOR
CLAY BONDED GRAPHITE CRUCIBLES**

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NEW DELHI 110002

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SPECIFICATION FOR CLAY BONDED GRAPHITE CRUCIBLES

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(Continued on page 6)

Indian Standard

SPECIFICATION FOR CLAY BONDED GRAPHITE CRUCIBLES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 18 December 1978, after the draft finalized by the Refractories Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Graphite, being an inert material, is most suited for making crucibles for melting ferrous and non-ferrous metals in the Industry. Graphite crucibles are required to have high refractoriness, high cold crushing strength and good thermal conductivity. The quality of a crucible is, however, judged by 'number of heats' it can give and it is hoped that this standard, which gives the necessary requirements, will be found useful by users and manufacturers. The sizes of the graphite crucibles are laid down in IS : 1748-1961*.

0.3 Graphite crucibles are generally of two different types, namely: (a) clay-bonded graphite crucibles, and (b) carbon-bonded graphite crucibles. This standard covers the requirements of clay-bonded graphite crucibles which are widely manufactured and used in the country.

0.4 The performance requirements are based on the present manufacturing capability in the country. These requirements will be reviewed by the Committee in future revision in the light of further development and improvement in the manufacturing technique.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for clay-bonded graphite crucibles.

*Sizes of graphite crucibles.

†Rules for rounding off numerical values (*revised*).

1.2 This standard shall not apply to graphite crucible for melting of steel and bullion.

2. PHYSICAL REQUIREMENTS

2.1 Crucible shall be made of graphite as the principal raw material, plus additional refractory materials.

2.2 Crucible shall be correct in shape and free from defects or cracks detrimental to its use.

2.3 Crucible when tested in accordance with the test methods specified shall have the requirements given in Table 1.

TABLE 1 PHYSICAL REQUIREMENTS FOR GRAPHITE CRUCIBLES

Sl. No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST (REF TO INDIAN STANDARD)
(1)	(2)	(3)	(4)
i)	Apparent porosity, percent, <i>Max</i> :		
	a) Below size 100	30	IS : 1528 (Part VIII)-1974*
	b) Size 100 and above	40	
ii)	Bulk density, g/ml, <i>Min</i> :		
	a) Below size 100	1.50	IS : 1528 (Part XII)-1974†
	b) Size 100 and above	1.40	

*Methods of sampling and physical tests for refractory materials: Part VIII Determination of apparent porosity (*first revision*).

†Methods of sampling and physical tests for refractory materials: Part XII Determination of bulk density (*first revision*).

2.4 The physical test requirements of crucible shall be optional and are to be decided between the user and the manufacturer.

3. PERFORMANCE REQUIREMENTS

3.1 The minimum number of heats a crucible shall withstand is given below:

Size	No. of Heats
(see IS : 1748-1961*)	
Below No. 60	25
No. 70 to No. 100	20
No. 120 to No. 150	15
No. 200 to No. 300	12
Above No. 300	8

*Sizes of graphite crucibles.

3.1.1 The following procedure shall be followed in determining the number of heats a crucible can withstand:

'Depending on the size of the crucible melt sufficient brass conforming to Grade CuZn40 of IS : 1264-1965*. Before melting, pre-heat the crucible to remove traces of moisture. Add sufficient lump charcoal or coke during melting to prevent oxidation of the metal. Note the number of times a crucible can be used for melting. The test shall be conducted in oil/coke fired furnace.'

3.1.2 It may be expected that the number of heats may vary from the number of heats specified in 3.1 to the following extent when the crucible is used for melting cast iron, copper and aluminium:

<i>Material</i>	<i>Variation</i>
Cast Iron	30 percent less
Copper	30 percent less
Aluminium	50 percent more

4. DIMENSIONS

4.1 Shapes, dimensions and dimensional tolerances for graphite crucibles shall comply with the requirements given in IS : 1748-1961†.

5. SAMPLING

5.1 Sampling method and number of samples to be taken shall be as agreed to between the purchaser and the manufacturer.

6. MARKING

6.1 Each crucible shall be marked suitably indicating the name of the manufacturer or trade-mark, and size number.

6.1.1 The crucibles may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

*Specification for brass ingots for gravity die castings and brass gravity die castings (including naval brass) (*revised*).

†Sizes of graphite crucibles.

(Continued from page 2)

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